

combining the teachings of Logsdon with the JP patent. Second, contrary to the Examiner's allegation in the Office Action, page 3, last line, Masuda **does not disclose** a desulfurizing agent making process, as claimed, namely independent claim 7. These points are further discussed below with regard to the cited references.

### The JP Patent

The JP patent discloses a desulfurization method of a feedstock hydrocarbon. The desulfurizing agent to be used in the method is formed by co-precipitation and the desulfurizing agent has copper, nickel and zinc oxide (see, e.g., the JP patent, claim 1). The JP patent discloses that the use of such a desulfurizing agent formed by co-precipitation is important (see, e.g., paragraph [0017]). Moreover, the JP patent discloses that a desulfurizing agent formed by impregnation has poor desulfurizing effect compared with one formed by co-precipitation (JP patent, Ex. 1, Com. Ex. 1 and Table 1).

In the JP patent, Comparative Example 1 discloses performing a desulfurizing test using a desulfurizing agent comprising Cu, Ni and ZnO formed by impregnation, and Example 1 discloses performing a desulfurizing test using a desulfurizing agent comprising Cu, Ni and ZnO formed by co-precipitation. The test results are shown in Table 1, which reveals that the desulfurizing agent formed by co-precipitation has a remarkably better desulfurizing effect compared with the desulfurizing agent formed by impregnation, though they are the same composition.

The teaching of the JP patent would lead a person of ordinary skill in the art to a conclusion that a desulfurizing agent formed by co-precipitation is excellent, and that a desulfurizing agent formed by impregnation is not preferable. Therefore, one of

ordinary skill in the art would not be motivated to modify the JP patent method by forming a desulfurizing agent by impregnation. Accordingly, it would not have been obvious for one of ordinary skill in the art to form a desulfurizing agent by impregnation, as claimed.

### Logsdon

Distinguishable from the JP patent, Logsdon disclosed an aldehyde hydrogenation catalyst prepared by co-precipitation and impregnation, a catalyst completely different than the one of the JP patent.

In view of the disclosures of the JP patent and Logsdon above, there **would be no need to combine** the catalyst making process including impregnation of Logsdon with the teaching of the JP patent. More specifically, a person of ordinary skill in the art would **not** be motivated to combine the catalyst making process, including impregnation of Logsdon, with the teaching of the JP patent that discloses that the impregnation is **not** preferable. Therefore, the prior art **teaches away** from combining the catalyst making process, including impregnation of Logsdon with the teachings of the JP patent.

Moreover, the technical fields of Logsdon and the JP patent are completely different in that the technical field of Logsdon relates to aldehyde hydrogenation, which is totally different from the desulfurization of feedstock hydrocarbon of the JP patent. Specifically, the aldehyde hydrogenation catalyst of Logsdon is a “catalyst” for promoting hydrogenation of aldehyde to alcohol. In contrast thereto, the desulfurizing agent of the JP patent is not a catalyst for promoting a chemical reaction but a “sulfur adsorbing material.” The catalyst of Logsdon does not change during the hydrogenation process, while the desulfurizing agent of the JP patent changes (i.e., it

adsorbs sulfur) during the desulfurization process. Therefore, the function is completely different between the aldehyde hydrogenation catalyst of Logsdon and the desulfurizing agent of the JP patent.

Accordingly, it is clear that the JP patent provides **no motivation whatsoever** for one of ordinary skill in the art to combine its teachings with that of Logsdon.

#### Masuda

Contrary to the Examiner's allegation, it would not have been obvious to combine the dissimilar hydrodesulfurization process operated at a space velocity (GHsv) of about 1000 h<sup>-1</sup> of Masuda with the process of the JP patent.

The desulfurizing agent making process, as recited in claim 7, comprises the steps of calcining a precipitate prepared by co-precipitation, forming the calcined precipitate into a shaped form of a copper oxide-zinc oxide mixture, impregnating the shaped form with iron and/or nickel, and further calcining the impregnated form to produce a calcined oxide.

The desulfurizing agent making process of Masuda thus **does not include any impregnating step**. Masuda discloses a process for preparing a Cu-Zn desulfurizing agent in column 2, line 54 to column 3, line 20. According to the process of Masuda, a precipitate formed by co-precipitation is washed with water, filtered and dried. Subsequently, the dried matter is calcined, giving a calcined mixture of copper oxide and zinc oxide. The obtained calcinate (mixed oxide) is then subjected to hydrogen reduction. Thus, Masuda does not disclose adding another ingredient by impregnation.

As is clear from the above, Masuda **in no way discloses or suggests** a desulfurizing agent making process, as recited in claim 7 of the present application.

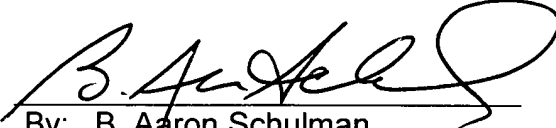
Therefore, a person skilled in the art would not reach the present invention, even if Masuda is combined with the JP patent. Moreover, one of ordinary skill in the art would not be motivated to combine, let alone find it obvious to incorporate, the space velocity (GHsv) of Masuda with the process of the JP patent.

Based on the foregoing, Applicants respectfully request that the rejection to claims 7-12 be reconsidered and all claims found to be allowable.

In view of the foregoing, Applicants respectfully submit that the present application is in condition for allowance.

Respectfully submitted,

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